

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended): Device for controlling the temperature of fluids circulating in a heat engine vehicle, of the type comprising a circuit in which a heat-transfer liquid circulates for cooling the heat engine and at least one heat-transfer liquid / fluid to be regulated heat exchanger, which it is intended to control the temperature of first and second fluids formed by lubricating oil of the heat engine of the vehicle and by recirculated exhaust gases, respectively, wherein said device comprises:

- a first heat-transfer liquid / lubricating oil exchanger,
- a second heat-transfer liquid / recirculated exhaust gases exchanger,

the first and second exchangers being connected to a same heat-transfer liquid circuit.

2. (Previously presented): Device for controlling the temperature of fluids according to claim 1, wherein the heat-transfer liquid circuit is connected to a heat source or to a heat sink.

3. (Previously presented): Device for controlling the temperature of fluids according to claim 2, wherein the heat source or the heat sink comprises heat storage means that can exchange heat with the heat-transfer liquid, in particular during a heating mode, in which the heat from the storage means is transferred to the heat-transfer liquid, and during a regeneration mode, in which the heat from the heat-transfer liquid is transferred to the storage means.

4. (Previously presented): Device for controlling the temperature of fluids according to claim 3, wherein the heat storage means comprise a chemical compound that stores or releases heat energy by changing phases.

5. (Previously presented): Device for controlling the temperature of fluids according to claim 2, wherein the two exchangers and the heat source or the heat sink are connected in series in the heat-transfer liquid circuit, in the order: heat source or heat sink, heat-transfer liquid / oil exchanger, heat-transfer liquid / recirculated exhaust gases exchanger, considering the direction of circulation of the heat-transfer liquid in the circuit.

6. (Previously presented): Device for controlling the temperature of fluids according to claim 1, wherein the heat-transfer liquid circuit comprises derivation means from the heat-transfer liquid / oil exchanger.

7. (Previously presented): Device for controlling the temperature of fluids according to claim 6, wherein the derivation means from the heat-transfer liquid / oil exchanger comprise a derivation branch from the heat-transfer liquid / oil exchanger and a three-way valve comprising first and second channels of the same signs connected, one to the exchanger, and the other, to the derivation branch from the heat-transfer liquid / oil exchanger, and a third channel of the sign opposed to that of the former connected to the circuit.

8. (Previously presented): Device for controlling the temperature of fluids according to claim 6, wherein the derivation means from the heat-transfer liquid / oil exchanger comprise a four-way valve comprising two channels of opposed signs connected to the heat-transfer liquid / oil exchanger and two channels of opposed signs connected to the heat-transfer liquid circuit.

9. (Previously presented): Device for controlling the temperature of fluids according to claim 2, wherein the heat-transfer liquid circuit comprises derivation means from the heat source or from the heat sink.

10. (Previously presented): Device for controlling the temperature of fluids according to claim 9, wherein the derivation means from the heat source or from the heat sink comprise a derivation branch from the heat source or from the heat sink and a three-way valve comprising first and second channels of the same signs connected, one to the heat source or to the heat sink, and the other, to the derivation branch from the heat source or from the heat sink, and a third channel of the sign opposed to that of the former connected to the circuit.

11. (Previously presented): Device for controlling the temperature of fluids according to claim 9, wherein the derivation means from the heat source or from the heat sink comprise a four-way valve comprising two channels of opposed signs connected to the heat source or to the heat sink and two channels of opposed signs connected to the heat-transfer liquid circuit.

12. (Previously presented): Device for controlling the temperature of fluids according to claim 1, wherein the heat-transfer liquid circuit comprises derivation means from the engine.

13. (Previously presented): Device for controlling the temperature of fluids according to claim 12, wherein the derivation means from the engine comprise a derivation branch from this engine and a three-way valve comprising first and second channels of the same signs connected, one to the engine, and the other, to the derivation branch of this engine, and a third channel of the sign opposed to that of the former connected to the circuit.

14. (Previously presented): Device for controlling the temperature of fluids according to claim 12, wherein the derivation means from the engine comprise a four-way valve comprising two channels of opposed signs connected to the engine and two channels of opposed signs connected to the circuit.

15. (Previously presented): Device for controlling the temperature of fluids according to claim 1, wherein the heat-transfer liquid circuit is connected additionally to heat exchange means between the heat-transfer liquid and the air of a passenger compartment of the vehicle.

16. (Previously presented): Device for controlling the temperature of fluids according to claim 1, wherein the heat-transfer liquid circuit is connected additionally to an electric pump capable of circulating the heat-transfer liquid in at least a portion of the circuit, in particular when the engine is off.

17. (Previously presented): Method for controlling the temperature of fluids implemented by the device according to claim 1, which comprises the following steps:

- raising the temperatures of the oil and of the heat-transfer liquid and determining whether the temperature of the oil is lower than a predetermined temperature (first condition),
- if this first condition is met, determining whether the temperature of the heat-transfer liquid is higher than the temperature of the oil (second condition),
 - If the second condition is met, adjusting the amounts of the heat-transfer liquid and of the oil circulating in the exchanger so as to promote heating of the oil through heat exchange with the relatively hot heat-transfer liquid,
 - If the second condition is not met, adjusting the amounts of the heat-transfer liquid and of the oil circulating in the exchanger so as to avoid or minimize the heat exchange between the oil and the relatively cold heat-transfer liquid,
- if the first condition is not met, adjusting the amounts of the heat-transfer liquid and of the oil circulating in the exchanger so as to promote cooling of the oil.

18. (Previously presented): Method for controlling the temperature of fluids implemented by the device according to claim 3, which comprises circulating the heat-transfer liquid both in the heat-transfer liquid / recirculated exhaust gases exchanger and in the heat storage means, and this independently from the operation in heating mode or in regeneration mode of these storage means.

19. (Previously presented): Method for controlling the temperature of fluids implemented by the device according to claim 3, wherein the heat-transfer liquid circuit is connected additionally to heat exchange means between the heat-transfer liquid and the air of a passenger compartment of the vehicle, wherein said method comprises, the heat storage means being in regeneration mode and the engine being on, adjusting the amount of the heat-transfer liquid circulating in the heat storage means so as to avoid or minimize the heat exchange between the heat storage means in the regeneration mode and the heat-transfer liquid.

20. (Previously presented): Method for controlling the temperature of fluids implemented by the device according to claim 3, wherein the heat-transfer liquid circuit is connected additionally to heat exchange means between the heat-transfer liquid and the air of a passenger compartment of the vehicle, wherein said method comprises, the heat storage means being in heating mode and the engine being off or operating at idle speed after a period at a higher speed:

- if at least one condition among a first category of condition(s) is met, adjusting the amount of heat-transfer liquid circulating in the heat storage means so as to avoid or minimize the heat exchange between the heat storage means in the heating mode and the heat-transfer liquid,
- if at least one condition among a second category of condition(s) is met, adjusting the amount of heat-transfer liquid circulating in the heat storage means so as to promote heating of the heat-transfer liquid through heat exchange with these storage means.

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21. (Previously presented): Method for controlling the temperature of fluids according to claim 20, wherein the first category of condition(s) comprises a voluntary order to turn off the engine by a user.

22. (Previously presented): Method for controlling the temperature of fluids according to claim 21, wherein the second category of condition(s) comprises an order to turn off the engine by a computer of the vehicle, a triggering of emergency lights of the vehicle accompanying turn-off of the engine, a dysfunction of the vehicle necessitating turn-off of the engine, and an order to heat the air of the passenger compartment in anticipation of start-up of the engine.